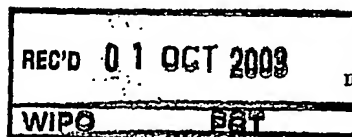




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INVESTOR IN PEOPLE

The Patent Office
Concept House
Cardiff Road
Newport
South Wales
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PRIORITY DOCUMENT

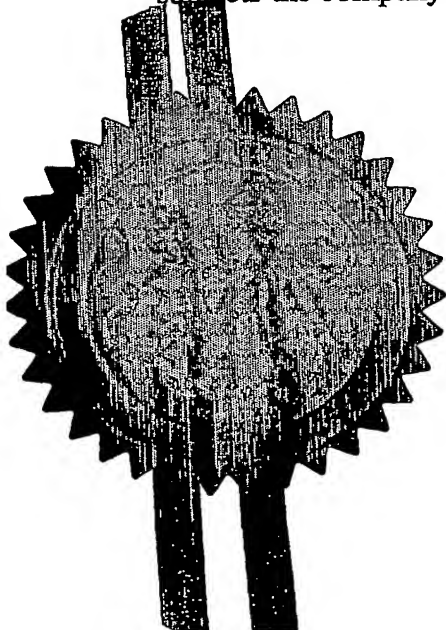
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Signed

Evans

Dated 23 September 2003

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THE PATENT OFFICE

17 MAR 2003



03 E792731-1 C95619

0306010.0

1777

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road
Newport
South Wales
NP10 8QQ

1. Your reference

PB - EK - 103

2. Patent application number

(The Patent Office will fill in this part)

0306010.0

17 MAR 2003

3. Full name, address and postcode of the or of each applicant (underline all surnames)

8588 717001 261

PATRICK L. BRAY
CAVITY PROTECTION SYSTEMS LTD
COMMERCIAL ROAD

Patents ADP number (if you know it)

PORTSMOUTH

If the applicant is a corporate body, give the country/state of its incorporation

PO1 4BP

ENGLAND

ENGLAND

4. Title of the invention

LINER FOR MICROWAVE OVEN

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

PATRICK L. BRAY
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Patents ADP number (if you know it)

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number
(if you know it)

Date of filing
(day / month / year)

UK

0218160.0

06.08.02

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day / month / year)

0218160.0

06.08.02
15/5/03

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

a) any applicant named in part 3 is not an inventor, or

b) there is an inventor who is not named as an applicant, or

c) any named applicant is a corporate body.

See note (d))

No.

Liner for Microwave Oven

The present invention relates to an oven liner, in particular a liner for a microwave oven, a process for producing the liner and the use of the liner in microwave ovens.

In commercial microwave ovens, which are more heavily used than domestic microwave ovens, spits of food can become deposited around the oven, on the inside walls and on other oven parts. Unless these food deposits are scrupulously cleaned off at the end of the day, they can build up to the extent that they desiccate and cause arcing and/or other damage. Subsequent repairs can be expensive.

Lightweight, disposable oven liners have been proposed. However, such known liners are of little practical use in a frequently used commercial microwave oven.

The object of the present inventions to provide an improved microwave oven liner.

According to the invention there is provided a microwave oven liner which comprises a roof, a floor, a back and two sides, all being of food grade plastics material and of sufficient rigidity for automatic washing, the whole being sized to fit removably in a microwave oven.

The microwave oven liners, according to the invention, are an improvement to those described in co-pending patent application 0218160.0 and in which the roof of the liner is shorter at the front to allow air to circulate for steam withdrawal from the oven and the roof of the liner is apertured for withdrawal of circulated air. The aperturing of the roof is preferably achieved by a series of holes which act as a coarse filter of spat food.

One particular feature of the preferred embodiment is an upstanding lip across the front of the floor to retain spilt liquid. A second preferred feature of the present invention is the presence of a series of ridges on the floor or in a base of the liner these ridges extending from front to back and preferably are rounded, standing approximately 2mm high and being spaced approximately 10mm apart. The effect of

these ridges is to raise the food vessel area off the base and thereby allows airflow beneath the cooking vessel. This helps to eliminate "hot spots".

It is also preferred that the inner base of the liner should be slightly thicker than that of the sides, back and roof and this facilitates ridging.

Conveniently, the outside corners of the liner, between the roof and the other panels and the floor and the other panels are chamfered or rounded to allow ready insertion of the liner into the oven without interference with oven corner seals.

The microwave oven liner according to the invention provides a cleaner and more effective use of a microwave oven. There are a number of practical advantages when the liner is used and these include.

1. The liner is easily removable and is dishwasher safe thereby providing quick and simple cleaning of the microwave oven. Use of the liner, particularly in a commercial dishwasher, avoids the lengthy manual cleaning of the cavity in a microwave oven.
2. If spillage of liquids occurs in the oven, the liner will prevent damage to the base — frequently of ceramic material — and the base seals of the microwave oven, the base being an expensive item to replace.
3. Use of the liner in a microwave oven prevents food contamination of the stirrer cover caused by spitting during the cooking of food.
4. The stirrer assemblies in the base, the roof, wave guide and the magnetrons are also protected from possible damage caused by the lack of cleaning the cavity and associated equipment in the microwave oven.
5. The use of the liner prevents arcing across residual food particles which are frequently missed under normal manual cleaning procedures.
6. The lens cover in a microwave oven is protected when a liner according to the invention is used. It is not unusual for steam from food to cause the lens lamp cover to become detached. This allows steam to exit the cavity onto the lamp holder. This can cause electrical arcing and burning of the lamp connector and wiring. Frequently grease can pass this way causing damage to other electrical components such as PC boards.

7. The lost time or "down time" of a microwave oven during busy periods is avoided while awaiting repairs.

The microwave oven liner according to the present invention can be made of any material which is microwave safe, dishwasher safe, food safe and with a high flash point. The composition used to manufacture the liner is preferably a plastic material which is fire retardant. This may be of various material for example polypropylene or more preferably polycarbonate material. The plastic material forming the liner is preferably transparent or translucent and it has been found that liners manufactured from clear polycarbonate are ideal for use as a liner.

Whilst the liner can be manufactured from sheet plastic which may be adhered together after bending, where appropriate, it is suitably manufactured by injection moulding. Although the mould may be made of stainless steel and diamond polished surface to give maximum clarity to the plastic material when being removed from the mould, yet a softer steel could be used particularly if opaque material is required. The mould may be in one or two parts to allow the base or top of the liner to be manufactured separately. In this case the two parts i.e. base or top, could be laser welded to the sides and back.

Alternatively the liner could be manufactured using "fold form" sheet material to produce a top, two sides and base in either one or two parts and if in two parts would be sealed together. The incorporation of special holes would enable the airflow to be extended, the position and number of such holes depending upon the make and model of the microwave oven being fitted.

The invention will be better understood by way of examples and with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a conventional microwave oven;

Figure 2 is a similar view of a liner of the invention sized to fit into the oven;

Figure 3 illustrates the ridges on the bottom surface of the floor of the liner.

Referring to the drawings, at Figure 1, a conventional microwave oven 1 has a glass panelled door 2 (shown open) with a cavity 3 lined with steel side and back walls 4, a

ceramic floor 5 and a thin plastics moulding roof 6. A gap 7 is provided at the front between the door and the roof, whilst a further aperture 8 is provided in the roof, for air circulation by a fan (not shown). A silicone seal 9 seals the floor to the side walls. Microwave emitters and stirrers are provided above the roof and below the floor but are not shown.

At figure 2 a liner 11 of the invention is an injection moulding of approximately 5mm thick elements, namely: a roof 12, a floor 14, a back 15 and two sides 16. The moulding is of food grade polypropylene, such that the liner can be washed in a commercial dishwasher.

The liner is sized to be a sliding fit in the oven. Due to its modest wall thickness, the capacity of the oven is reduced by only a small amount, while being sufficiently ridged for washing.

The roof is shorter at the front 17 than the floor to allow air circulation. The roof is apertured also for air circulation with a series of small c. 4mm bores 18 registering with the roof aperture 8.

A lip 19 is provided across the front of the floor to retain spilt liquid. The external corners 20 are chamfered to clear the silicone seal 9 for instance.

At figure 3 a liner 11 is illustrated showing the ridges 21 on the upper surface of the floor of the liner. The moulding is of food grade polycarbonate and is such that the liner can be washed in a commercial dishwasher.

Whilst it might have been expected that the use of a liner according to the invention in a microwave oven would adversely affect the cooking performance of the oven, we have surprisingly found that no appreciable loss of performance is experienced when the liner is of 5mm thick, food grade polypropylene or similar thickness food grade polycarbonate.

FIGURE 1.

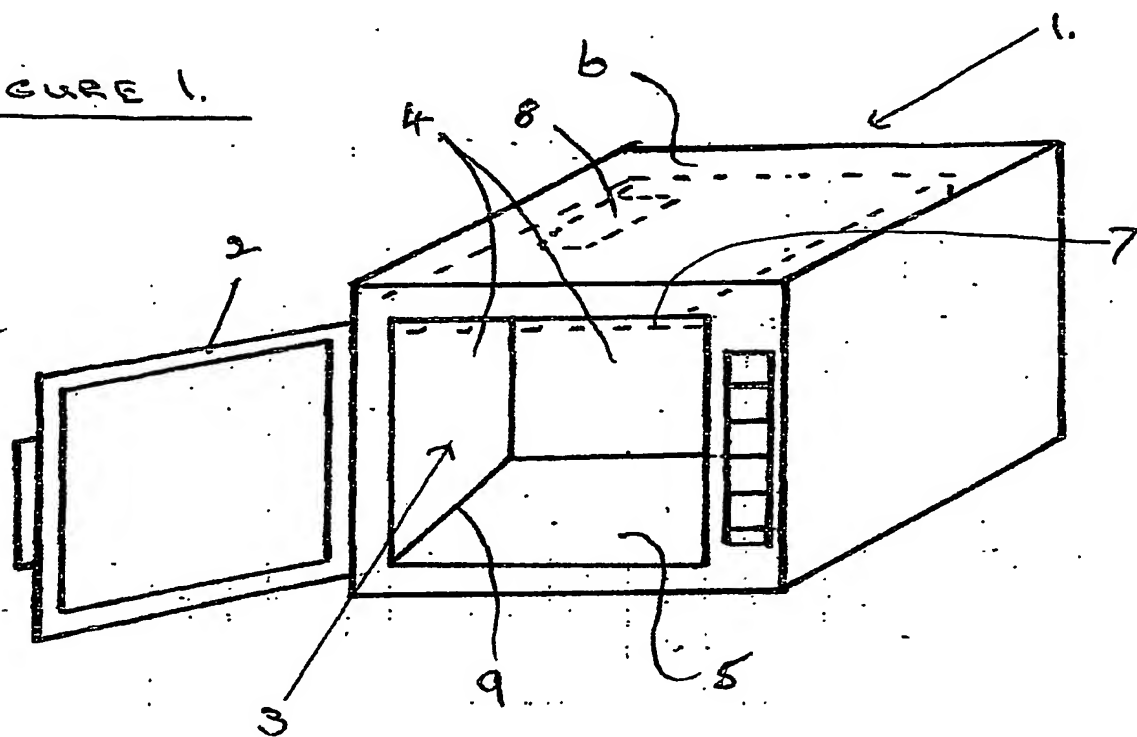


FIGURE 2

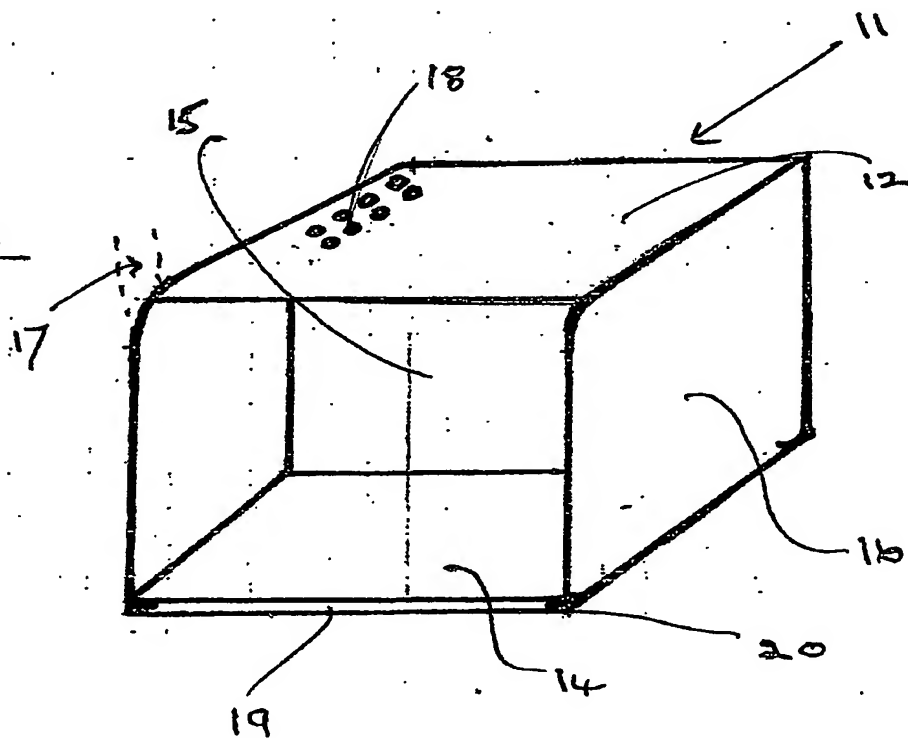
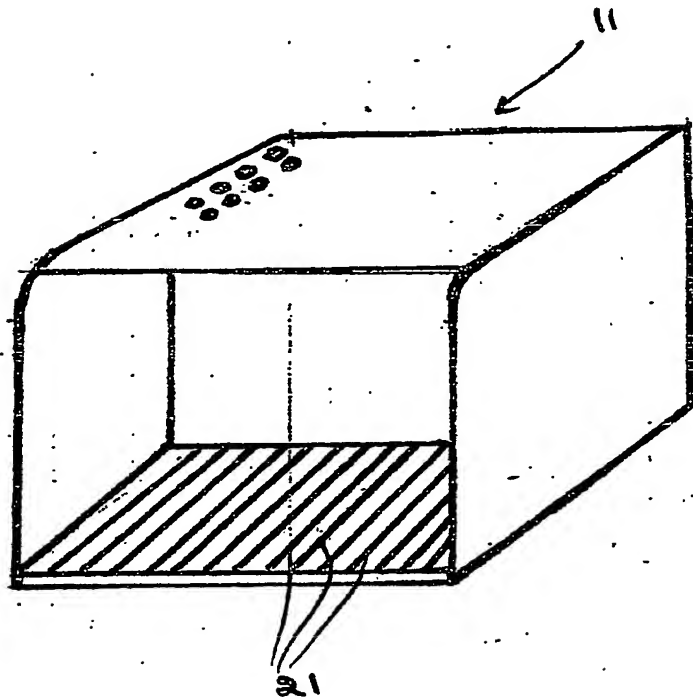


FIGURE 3



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